

# Undergraduate Research Fair

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Thursday, April 14, 2022  
3:30–6:30 p.m.

## SCHEDULE OF EVENTS

Links to the Virtual Fair will be sent to attendees via email.

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|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3:30–4:15 p.m.</b> | <b>Virtual Research Fair</b>                                                                                                                                                                |
| <b>4:15–4:30 p.m.</b> | <i>Break</i>                                                                                                                                                                                |
| <b>4:30–5:30 p.m.</b> | <b>Research Fair, Group A</b>                                                                                                                                                               |
| <b>5:30–6 p.m.</b>    | <b>“Your Path, Your Way: Reflections from Graduate Students”</b><br>Amelia Cephas, Interdisciplinary Graduate Program<br>Dawson Baluran, Sociology<br>Cameron Nurse, Mechanical Engineering |
| <b>5:30–6:30 p.m.</b> | <b>Research Fair, Group B</b>                                                                                                                                                               |

# Partner Offices and Programs

## Offices/Programs

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<a href="http://vanderbilt.edu/vinse">vanderbilt.edu/vinse</a>	vinse@vanderbilt.edu
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<a href="http://vanderbilt.edu/writing">vanderbilt.edu/writing</a>	writing.studio@vanderbilt.edu

# Virtual Fair Groups

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|----|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| 1  | Matthew Anguiano '23<br>Neuroscience                                  |  <b>Evaluating Differences in Perceived Stress in Adolescents with and without Autism</b><br><i>Mentor: Professor Blythe Corbett, Psychiatry and Behavioral Sciences</i>                            | <b>Virtual</b><br>3:30–4:15 p.m. |
| 2  | Allyson Arserio '22<br>Child Studies; Medicine, Health and Society    | <b>The Experiences of Parents Supporting Their Young Children with Complex Communication Needs Who Use Speech-Generating Devices</b><br><i>Mentor: Professor Elizabeth Biggs, Special Education</i>                                                                                  | <b>Virtual</b><br>3:30–4:15 p.m. |
| 3  | Kerissa Bryant '23<br>Child Development; Medicine, Health and Society | <b>GP130 Cytokines May Promote CSC Differentiation of Breast Cancer Cells</b><br><i>Mentor: Professor Rachelle Johnson, Medicine</i>                                                                                                                                                 | <b>Virtual</b><br>3:30–4:15 p.m. |
| 4  | Haoran Cao '22<br>Economic and History; Mathematics                   | <b>Effects of Railway Access on Internal Migration in the United States, 1850-1940</b><br><i>Mentor: Professor Ariell Zimran, Economics</i>                                                                                                                                          | <b>Virtual</b><br>3:30–4:15 p.m. |
| 5  | Olivia Chen '22<br>Medicine, Health and Society; Neuroscience         | <b>Characterizing the SLC6A1 Mutation A288V Mouse as a Clinical Model for Autism</b><br><i>Mentor: Professor Katty Kang, Neurology</i>                                                                                                                                               | <b>Virtual</b><br>3:30–4:15 p.m. |
| 6  | Kolapo Dairo '22<br>Psychology; Medicine, Health and Society          | <b>Children's Perceptions and Drawings of Novel Social Groups</b><br><i>Mentor: Professor Jonathan Lane, Psychology</i>                                                                                                                                                              | <b>Virtual</b><br>3:30–4:15 p.m. |
| 7  | Jackson Davis '23<br>Human and Organizational Development             |  <b>Feasibility of Universal Tuition-Free Higher Education Access in the University of North Carolina System</b><br><i>Mentor: Professor Sayil Camacho, Leadership, Policy, and Organizations</i> | <b>Virtual</b><br>3:30–4:15 p.m. |
| 8  | Kathryn Fink '22<br>Chemistry                                         | <b>The Use of Cationic Bis(phosphine) Iridium Complexes to Activate C-H and C-O Bonds</b><br><i>Mentor: Professor Nathan Schley, Chemistry</i>                                                                                                                                       | <b>Virtual</b><br>3:30–4:15 p.m. |
| 9  | Campbell Flower '22<br>Chemistry                                      | <b>The ASCEND Initiative: Environmental Chemicals</b><br><i>Mentor: Professor John McLean, Chemistry</i>                                                                                                                                                                             | <b>Virtual</b><br>3:30–4:15 p.m. |
| 10 | Yurim Hong '22<br>Medicine, Health and Society; Psychology            |  <b>Cardiac Fibroblast Reprogramming</b><br><i>Mentor: Professor Young Jae Nam, Medicine</i>                                                                                                      | <b>Virtual</b><br>3:30–4:15 p.m. |
| 11 | Maiesha Hossain '22<br>Political Science                              | <b>The Bargaining Model of Genocide</b><br><i>Mentor: Professor Brenton Kenkel, Political Science</i>                                                                                                                                                                                | <b>Virtual</b><br>3:30–4:15 p.m. |

12 Sarah Hourihan '24 Biological Sciences; Music	<b>The Role of Learned Song in Evolution: Quantifying Song Differences Between Subspecies of the Dark-Eyed Junco</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Nicole Creanza, Biological Sciences</i>	
13 Ameera Ilyas '23 Medicine, Health and Society; Neuroscience	<b>7T Fusiform Project</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Carissa Cascio, Psychiatry and Behavioral Sciences</i>	
14 Jennifer Jiang '22 Computer Science; Chemistry	<b>Characterization of Polyurethane with Tandem Mass Spectrometry</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor David Hercules, Chemistry</i>	
15 Sriya Jonnakuti '24 Medicine, Health and Society; Molecular and Cellular Biology	<b>Defining the Role of T-bet and Eomes in Tumor Specific T-Cell Dysfunction</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Mary Philip, Medicine</i>	
16 Jong Eun Jung '22 Human and Organizational Development	<b>Understanding the Formation of Tennessee School Improvement Plans Using Text-as-Data Methods</b>	Virtual Block: 3–4 p.m.
	<i>Mentor: Professor Jason Grissom, Leadership, Policy, and Organizations</i>	
17 Min Kalasikam '24 Biochemistry; Medicine, Health and Society	<b>Inhibiting NER: Crystallization and Modeling and Fragment Screen of XPA for Small Molecule Inhibitor Discovery</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Walter Chazin, Biochemistry</i>	
18 Joyce Kariuki '22 Molecular and Cellular Biology	<b>Unfolded Protein Response Modulation by SARS-CoV-2 Nsp3 Protein N-Terminal Domains</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Lars Plate, Chemistry, Biological Sciences</i>	
19 Samantha Keller '22 Medicine, Health and Society	<b> Reproductive Health After Cancer Diagnosis and Treatment (The React Study)</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Andreea Holowatyj, Medicine</i>	
20 Erin Kim '22 Cognitive Studies; Child Development	<b> Including All Voices</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Georgene Troseth, Psychology and Human Development</i>	
21 Darcie Kim '23 English; Neuroscience	<b> Plasma Amyloid and Cerebral Blood Flow and Physiological Log Parsing</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Angela Jefferson, Neurology</i>	
22 Sara Kirschner '22 Cognitive Studies	<b> Coping Among Adolescents Exposed to Adverse Childhood Experiences</b>	Virtual 3:30–4:15 p.m.
	<i>Mentor: Professor Douglas Shadle, Music</i>	

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# Virtual Fair Groups

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| 23 | Isabelle Krieger '22<br>European Studies; French                                    | <b>Eco-hardcore: The Emergence of Environmentalism's Voice in Modern Music</b><br><i>Mentor: Professor Bruce Compas, Psychology and Human Development</i>                                                               | Virtual<br>3:30–4:15 p.m. |
| 24 | Zhaojing Liu '23<br>Biochemistry and Chemical Biology;<br>Neuroscience              | <b>B Cells from Anti-Synthetase Syndrome Patients Do Not Require Somatic Hypermutation to Recognize Jo-1 Autoantigen</b><br><i>Mentor: Professor Rachel Bonami, Medicine</i>                                            | Virtual<br>3:30–4:15 p.m. |
| 25 | Janet Mariadoss '23<br>Medicine, Health and Society;<br>Neuroscience                | <b>Nested Knowledge: A Systematic Review and Case Study of a Multidisciplinary Project Between the Arts and Sciences Utilizing Project Management Theory</b><br><i>Mentor: Professor Matthias Riess, Anesthesiology</i> | Virtual<br>3:30–4:15 p.m. |
| 26 | Alexander McLeod '22<br>Medicine, Health and Society;<br>Neuroscience               | <b>Sex Differences in Normative Auditory Function of Non-Human Primates</b><br><i>Mentor: Professor Amy Needham, Psychology and Human Development</i>                                                                   | Virtual<br>3:30–4:15 p.m. |
| 27 | Lucas Mowery '22<br>Chemical Engineering                                            | <b>Developing GelCad Biomaterials to Promote Vascular Growth</b><br><i>Mentor: Professor Ann Richmond, Pharmacology</i>                                                                                                 | Virtual<br>3:30–4:15 p.m. |
| 28 | Mustafa Najeed '22<br>Neuroscience                                                  | <b>Endocannabinoid Regulation of Predator Odor Fear Response</b><br><i>Mentor: Professor Julia Sheffield, Psychiatry and Behavioral Sciences</i>                                                                        | Virtual<br>3:30–4:15 p.m. |
| 29 | Intiser Parash '24<br>Computer Science                                              | <b>Large-Scale, Efficient Vehicle Trajectory Extraction from Cameras</b><br><i>Mentor: Professor Julio Ayala, Molecular Physiology and Biophysics</i>                                                                   | Virtual<br>3:30–4:15 p.m. |
| 30 | Vitrag Patel '22<br>Molecular and Cellular Biology;<br>Medicine, Health and Society | <b>Role of Complement Factor 5 (C5) in Metabolism</b><br><i>Mentor: Professor Alyssa Hasty, Molecular Physiology and Biophysics</i>                                                                                     | Virtual<br>3:30–4:15 p.m. |
| 31 | Karen Pu '24<br>Computer Science                                                    | <b>Designing a Hemagglutinin Trimer to Improve Vaccine Efficiency</b><br><i>Mentor: Professor Audrey Bowden, Biomedical Engineering</i>                                                                                 | Virtual<br>3:30–4:15 p.m. |
| 32 | Sunnie Qu '22<br>Economics, Computer Science                                        | <b>Design and Testing of a Low-Cost Eye Tracking System for Human-Computer Interaction</b><br><i>Mentor: Professor Jens Meiler, Chemistry</i>                                                                           | Virtual<br>3:30–4:15 p.m. |
| 33 | Linh Tran '22<br>Neuroscience; Medicine, Health<br>and Society                      | <b>Investigating Mutations Linked to Potential Undiagnosed Primary Immunodeficiencies (PIDs)</b><br><i>Mentor: Professor Timothy Cover, Medicine</i>                                                                    | Virtual<br>3:30–4:15 p.m. |

34 Margaret Victory '23  
Philosophy; Political Science

 **Understanding the Reception of Refugees in Tennessee: Political and Socioeconomic Factors**

*Mentor: Professor Ruben Martinez-Barricarte, Medicine*

**Virtual**  
3:30–4:15 p.m.





35 Yuxi Wen '22  
Educational Studies; Mathematics;  
Child Studies

**Augment Reality (AR) in Elementary and Secondary STEM Education**






*Mentor: Professor Jennifer Larson, Political Science*

**Virtual**  
3:30–4:15 p.m.

# In-Person Presentations – Group A

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|----|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 36 | Lindsay Ahlmeyer '22<br>Anthropology; Classical and<br>Mediterranean Studies |  <b>Examining Childhood Stress in Huancavelica, Peru: An Analysis of Non-Specific Stress Markers among the Santa Bárbara Mining Community During the 16th-18th Centuries</b><br><i>Mentor: Professor Tiffany Tung, Anthropology</i> | <b>Group: A</b><br>4:30–5:30 p.m. |
| 37 | Tucker Apgar '23<br>Biochemistry and Chemical Biology                        | <b>Towards Validating a Novel Drug Target</b><br><i>Mentor: Professor Charles Sanders, Biochemistry</i>                                                                                                                                                                                                              | <b>Group: A</b><br>4:30–5:30 p.m. |
| 38 | Alyssa Bolster '22<br>Anthropology; Law History<br>and Society               | <b>Diet and Foodways in the Wari Imperial Hinterlands: Stable Isotope Analysis of the La Real Burial Population (600 – 1000 CE), Arequipa, Peru</b><br><i>Mentor: Professor Tiffany Tung, Anthropology</i>                                                                                                           | <b>Group: A</b><br>4:30–5:30 p.m. |
| 39 | Jordon Brinkley '22<br>Medicine, Health and Society                          |  <b>Role of Calcium Handling in Drug Tolerant BRAF-Mutant Melanoma</b><br><i>Mentor: Professor Vito Quaranta, Biochemistry</i>                                                                                                      | <b>Group: A</b><br>4:30–5:30 p.m. |
| 40 | Joseph Choe '23<br>Biological Sciences                                       | <b>Transcriptional Consequences of IL-23 Signaling in Colonic Treg Cells</b><br><i>Mentor: Professor Jeremy Goettel, Medicine</i>                                                                                                                                                                                    | <b>Group: A</b><br>4:30–5:30 p.m. |
| 41 | Alexandra Duncan '23<br>Medicine, Health and Society;<br>Neuroscience        |  <b>Role of Enhancer RNAs in L-Type Calcium Signaling Activation of c-Fos mRNA Transcription in Learning and Memory</b><br><i>Mentor: Professor Roger Colbran, Molecular Physiology and Biophysics</i>                            | <b>Group: A</b><br>4:30–5:30 p.m. |
| 42 | Anthony Gaidici '22<br>Economics                                             | <b>D1 and D2 Medium Spiny Neurons (MSNs) in Information Encoding in the Nucleus Accumbens (NAc)</b><br><i>Mentor: Professor Erin Calipari, Pharmacology</i>                                                                                                                                                          | <b>Group: A</b><br>4:30–5:30 p.m. |
| 43 | Warren Gignac '23<br>Political Science, Economics                            | <b>Analyzing the Effects of Historical Redlining on Modern Day Social Outcomes in Nashville</b><br><i>Mentor: Stacy Curry-Johnson, Geospatial Data and Systems</i>                                                                                                                                                   | <b>Group: A</b><br>4:30–5:30 p.m. |
| 44 | Abigail Green '22<br>Medicine, Health and Society;<br>Neuroscience           | <b>Arterial Stiffness Is Related to Cholinergic Tract Integrity in Older Adults</b><br><i>Mentor: Professor Angela Jefferson, Neurology</i>                                                                                                                                                                          | <b>Group: A</b><br>4:30–5:30 p.m. |
| 45 | Ivy Han '23<br>Child Development;<br>Biological Sciences                     |  <b>Wound-Induced Changes in Epithelial Tension</b><br><i>Mentor: Professor Andrea Page-McCaw, Cell and Developmental Biology</i>                                                                                                 | <b>Group: A</b><br>4:30–5:30 p.m. |
| 46 | Andrew Hanna '22<br>Biochemistry                                             | <b>Shear-Thinning ROS Responsive Hydrogels for Wound Healing</b><br><i>Mentor: Professor Craig Duvall, Biomedical Engineering</i>                                                                                                                                                                                    | <b>Group: A</b><br>4:30–5:30 p.m. |



47	Patrick Hu '23 Musical Arts; Physics	<b>Applications of Thermodynamics to Black Hole Astrophysics</b> <i>Mentor: Professor Karan Jani, Physics and Astronomy</i>	<b>Group: A</b> 4:30–5:30 p.m.
48	Sophia Hwang '23 Cellular and Molecular Biology; Medicine, Health and Society	 <b>Evaluation of Small Molecule Inhibitors of Pseudomonas Virulence Factor LasB as Non-Traditional Immunotherapeutics</b> <i>Mentor: Professor Julia Bohannon, Anesthesiology</i>	<b>Group: A</b> 4:30–5:30 p.m.
49	Shani Israel '23 Child Development; Medicine, Health and Society	 <b>Sex Hormone Regulation of the Mouse Ductus Arteriosus</b> <i>Mentor: Professor Elaine Shelton, Pediatrics</i>	<b>Group: A</b> 4:30–5:30 p.m.
50	Mahip Kalra '22 Communication of Science and Technology; Molecular and Cellular Biology	<b>The Evolutionary Genetic Basis of Bacterial-Mediated Embryonic Lethality</b> <i>Mentor: Professor Seth Bordenstein, Biological Sciences</i>	<b>Group: A</b> 4:30–5:30 p.m.
51	Emma Kirby '22 Bassoon; German Studies	<b>Film in the Weimar Republic: The Cultural and Political Intricacies of the Soundtrack</b> <i>Mentor: Professor Amy Needham, Psychology and Human Development</i>	<b>Group: A</b> 4:30–5:30 p.m.
52	Bryan Liu '23 Medicine, Health and Society	 <b>Transcriptomic Analysis to Identify Multi-Lineage Expression of Sox17</b> <i>Mentor: Professor Marjan Rafat, Chemical and Biomolecular Engineering</i>	<b>Group: A</b> 4:30–5:30 p.m.
53	Shihe Luan '22 Human and Organizational Development; German Studies	<b>Using Video Data to Examine How Families Teach Their Young Children</b> <i>Mentor: Professor Joanne Golann, Public Policy and Education</i>	<b>Group: A</b> 4:30–5:30 p.m.
54	Samantha MacGavin '22 Neuroscience; Medicine, Health and Society	<b>Understanding Molecular Functions of <math>\alpha</math>B Crystallin in the Lens</b> <i>Mentor: Professor Mark Magnuson, Molecular Physiology and Biophysics</i>	<b>Group: A</b> 4:30–5:30 p.m.
55	Nisha Mailapur '23 Economics	 <b>Defining Culinary Medicine</b> <i>Mentor: Professor Cody Siciliano, Pharmacology</i>	<b>Group: A</b> 4:30–5:30 p.m.
56	Evelyn Mattson '22 Child Development; Cognitive Studies	 <b>Exploring Links between Infant Object Exploration and Mother's Use of Language</b> <i>Mentor: Professor Kendra Oliver, Pharmacology</i>	<b>Group: A</b> 4:30–5:30 p.m.
57	Kaelon McNeece '23 Mechanical Engineering	<b>Design and Validation of a Mid-Infrared Metabolic Rate Sensor</b> <i>Mentor: Professor Ramnarayan Ramachandran, Psychology</i>	<b>Group: A</b> 4:30–5:30 p.m.

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# In-Person Presentations – Group A

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|----|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 58 | Rebecca Mueller '23<br>Human and Organizational<br>Development; Psychology                            | <b>The Association between COVID-19 Restriction Severity and Mental Health in Spring 2020</b><br><i>Mentor: Professor Ethan Lippmann, Chemical and Biomolecular Engineering</i>                             | <b>Group: A</b><br>4:30–5:30 p.m. |
| 59 | Monika Naguib '24<br>Psychology                                                                       | <b>Trajectory of Delusion Severity in First Episode Psychosis</b><br><i>Mentor: Professor Autumn Kujawa, Psychology and Human Development</i>                                                               | <b>Group: A</b><br>4:30–5:30 p.m. |
| 60 | Dev Patel '23<br>Medicine, Health and Society;<br>Molecular and Cellular Biology                      | <b>D1 and D2 Medium Spiny Neurons (MSNs) in Information Encoding in the Nucleus Accumbens</b><br><i>Mentor: Professor Erin Calipari, Pharmacology</i>                                                       | <b>Group: A</b><br>4:30–5:30 p.m. |
| 61 | Olivia Pembridge '22<br>Communication of Science and<br>Technology; Molecular and<br>Cellular Biology | <b>Characterizing AP4-Deficient D. rerio Embryo Morphology and Autophagy Gene Expression</b><br><i>Mentor: Professor Alan Storrow, Emergency Medicine</i>                                                   | <b>Group: A</b><br>4:30–5:30 p.m. |
| 62 | Mayaank Pillai '24<br>Computer Science; Mathematics                                                   | <b>A Metric to Predict the Utility of Cystoscopy Frames in 3D Bladder Reconstructions</b><br><i>Mentor: Professor Eric Delpire, Anesthesiology</i>                                                          | <b>Group: A</b><br>4:30–5:30 p.m. |
| 63 | Alyssa Questell '23<br>Biomedical Engineering;<br>Environmental Sociology                             | <b>Investigating the Role of Matrix Stiffness on Metastatic Breast Cancer Progression in the Bone Marrow Microenvironment</b><br><i>Mentor: Professor Nilanjan Sarkar, Mechanical Engineering</i>           | <b>Group: A</b><br>4:30–5:30 p.m. |
| 64 | Jared Robinson '22<br>Medicine, Health and Society                                                    | <b>Cardiolipin and Ceramide Phosphoethanolamine Lipid Conformational Trend Analysis with High Resolution Ion Mobility (HRIM) - Mass Spectrometry</b><br><i>Mentor: Professor Beth Conklin, Anthropology</i> | <b>Group: A</b><br>4:30–5:30 p.m. |
| 65 | Savannah Rogers '23<br>Medicine, Health and Society;<br>Neuroscience                                  | <b>Neural Correlates of Social Motivation in Adults with Autism</b><br><i>Mentor: Professor Larry Rolen, Chemistry</i>                                                                                      | <b>Group: A</b><br>4:30–5:30 p.m. |
| 66 | Bryson Rorie '22<br>Neuroscience                                                                      | <b>Operant Sensation Seeking and Implications for Reward Learning and Addiction in Males vs. Females</b><br><i>Mentor: Professor Larry Rolen, Mathematics</i>                                               | <b>Group: A</b><br>4:30–5:30 p.m. |
| 67 | Sammie Rosen '22<br>Communication of Science<br>and Technology; Medicine,<br>Health and Society       | <b>The Impact of the COVID-19 Pandemic on Sociodemographic Disparities in Rates of Elective Hernia Surgeries</b><br><i>Mentor: Professor Sasha Key, Hearing and Speech Sciences</i>                         | <b>Group: A</b><br>4:30–5:30 p.m. |

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|----|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 68 | Maya Sachs '23<br>Neuroscience; Medicine, Health and Society                          |  <b>Interoceptive Performance on Cardiac Tasks with and without Aerobic Exercise</b><br><i>Mentor: Professor Richard Pierce, Surgery</i> | <b>Group: A</b><br>4:30–5:30 p.m. |
| 69 | Katrina Schwensen '24<br>Chemical Engineering                                         | <b>Characterization of Volatile Vanderbilt University Allosteric Agonists (VUAAs) as Binary Additives</b><br><i>Mentor: Professor Sophie Bjork-James, Anthropology</i>                                                    | <b>Group: A</b><br>4:30–5:30 p.m. |
| 70 | Alisa Schmidt '24<br>Chemistry                                                        | <b>Vibrational Strong Coupling in Nanoscale Hyperbolic Phonon Polariton Cavities</b><br><i>Mentor: Professor Laurence Zwiebel, Biological Sciences</i>                                                                    | <b>Group: A</b><br>4:30–5:30 p.m. |
| 71 | Athira Sivadas '23<br>Biochemistry; Medicine, Health and Society                      | <b>Modulation of Unfolded Protein Response by SARS-CoV-2 Proteins</b><br><i>Mentor: Professor Katherine McDonell, Neurology</i>                                                                                           | <b>Group: A</b><br>4:30–5:30 p.m. |
| 72 | Anusha Srivastava '22<br>Medicine, Health and Society; Molecular and Cellular Biology | <b>Role of Outer Membrane Proteins in Helicobacter pylori Biofilm Formation</b><br><i>Mentor: Professor Mallory Hacker, Neurology</i>                                                                                     | <b>Group: A</b><br>4:30–5:30 p.m. |
| 73 | Jasmine Su '23<br>Biomedical Engineering                                              | <b>Wound Induced Cell-Cell Fusions in Drosophila Epithelium</b><br><i>Mentor: Professor Thomas Clements, Biological Sciences</i>                                                                                          | <b>Group: A</b><br>4:30–5:30 p.m. |
| 74 | Matthew Tremblay '22<br>Chemistry: Computer Science                                   | <b>The Effect of Zero-Point Energy in Simulating Organic Reactions with Post-Transition State Bifurcation</b><br><i>Mentor: Professor Andrea Page-McCaw, Cell and Developmental Biology</i>                               | <b>Group: A</b><br>4:30–5:30 p.m. |
| 75 | Jessie Wu '23<br>Medicine, Health and Society; Political Science                      |  <b>Bureaucratic Repression as Indirect Repression</b><br><i>Mentor: Professor Noel Enyedy, Teaching and Learning</i>                  | <b>Group: A</b><br>4:30–5:30 p.m. |
| 76 | Zhihan Zhao '23<br>Biochemistry and Chemical Biology; Mathematics                     |  <b>Investigating Septacidin Analog Production and Bioactive Potential</b><br><i>Mentor: Professor Emily Ritter, Political Science</i> | <b>Group: A</b><br>4:30–5:30 p.m. |

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# In-Person Presentations – Group B


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|----|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 77 | Hannah Anderson '22<br>Physics                                                            | <b>Angular Power Spectrum and Elliptic Flow from Event Maps in Heavy Ion Collisions</b><br><i>Mentor: Professor Victoria Greene, Physics</i>                                                                                                                                                                           | <b>Group: B</b><br>5:30–6:30 p.m. |
| 78 | Afan Atif '23<br>Chemistry                                                                | <b>Computationally-Guided Study of Iridium Catalyzed Hydrosilylation of Cyclohexyl Ethers Substrates / Computationally-Aided Synthetic Design of Bicyclopentyl Phosphines Ligands for Catalyst Design</b><br><i>Mentor: Professor Nathan Schley, Chemistry</i>                                                         | <b>Group: B</b><br>5:30–6:30 p.m. |
| 79 | Sara Bottome '23<br>Biochemistry and Chemical Biology                                     |  <b>Identification of Host Protein-RNA Cross-Link Sites on the Chikungunya Viral RNA Genome</b><br><i>Mentor: Professor Manuel Ascano, Jr., Biochemistry</i>                                                                          | <b>Group: B</b><br>5:30–6:30 p.m. |
| 80 | Malak Elmessiry '23<br>Neuroscience                                                       |  <b>Examining the Effect of Question Phrasing on Memory for Fact-Checks</b><br><i>Mentor: Professor Lisa Fazio, Psychology and Human Development</i>                                                                                  | <b>Group: B</b><br>5:30–6:30 p.m. |
| 81 | Maximilian Garcia '22<br>Neuroscience; Spanish                                            |  <b>More than Meets the Eye: Comparing Risk Factor Associations between PDR and DME</b><br><i>Mentor: Professor Dolly Ann Padovani-Claudio, Ophthalmology and Visual Sciences</i>                                                    | <b>Group: B</b><br>5:30–6:30 p.m. |
| 82 | Abhijeet Grewal '22<br>Human and Organizational Development; Medicine, Health and Society | <b>Exploring How Binding Affinity between Arrestin-3 and Beta-2 Adrenergic Receptors Are Affected by Amino Acid Substitutions at Positions 252 and 335 on Arrestin-3</b><br><i>Mentor: Professor Vsevolod Gurevich, Pharmacology</i>                                                                                   | <b>Group: B</b><br>5:30–6:30 p.m. |
| 83 | Lauren Grohowski '23<br>Mechanical Engineering; Communication of Science and Technology   | <b>Effect of Downsampling Frequency in Wearable Insole Force Estimates</b><br><i>Mentor: Professor Karl Zelik, Mechanical Engineering</i>                                                                                                                                                                              | <b>Group: B</b><br>5:30–6:30 p.m. |
| 84 | Lilly He '22<br>Molecular and Cellular Biology; Spanish                                   | <b>The Effects of Q276P/R326Q Polymorphisms on CD148 Interaction with Extracellular Ligands</b><br><i>Mentor: Professor Takamune Takahashi, Medicine</i>                                                                                                                                                               | <b>Group: B</b><br>5:30–6:30 p.m. |
| 85 | Catherine Hobbs '23<br>Medicine, Health and Society                                       |  <b>COVID-19 Vaccine Hesitancy in Adult Emergency Department Patients</b><br><i>Mentor: Professor Storrow Alan, Emergency Medicine</i>                                                                                              | <b>Group: B</b><br>5:30–6:30 p.m. |
| 86 | Emma Kane '23<br>Neuroscience; History of Art                                             |  <b>Glucagon-Like Peptide-1 Receptor Signaling Promotes Glycogen Accumulation in Human Hippocampal Astrocytes Necessary to Support Neuronal Function and Memory Formation</b><br><i>Mentor: Professor Kevin Niswender, Medicine</i> | <b>Group: B</b><br>5:30–6:30 p.m. |

- 87 Anish Katta '22  
Medicine, Health and Society
- Inhibition of p38MAPK Signaling Pathway in Vascular Endothelium During Viral Infection**
- Mentor: Professor Joyce Cheung-Flynn, Vascular Surgery*
- Group: B  
5:30–6:30 p.m.
- 88 Katherine Kim '23  
Medicine, Health and Society
- Infants' Novel Use of a Familiar Tool: The Shift of Behavior Between the First and Second Year of Life**
- Mentor: Professor Amy Needham, Psychology and Human Development*
- Group: B  
5:30–6:30 p.m.
- 89 Dylan Kistler '22  
Economics; Cognitive Studies; English
- Does the Timing of Cuts between Speaking and Reacting Actors Affect Memory for Cinematic Conversation?**
- Mentor: Professor Daniel Levin, Psychology and Human Development*
- Group: B  
5:30–6:30 p.m.
- 90 Ashika Kuchhangji '24  
Medicine, Health and Society; Neuroscience
- First Grade Profiles of Errors on Phonological Awareness Assessment**
- Mentor: Professor Melanie Lowe, Hearing and Speech Sciences*
- Group: B  
5:30–6:30 p.m.
- 91 Jarrett Lee '22  
Chemistry; Medicine, Health and Society
- Creation/Analysis of the AFB1 FAPY Adduct**
- Mentor: Professor C. Melanie Schuele, Hearing and Speech Sciences*
- Group: B  
5:30–6:30 p.m.
- 92 Erica Lin '24  
Biological Sciences: Molecular and Cellular Biology
- Characterization of Changes to the Tumor Microenvironment Post-Radiation Therapy and Evaluation of Focused Ultrasound as an Adjuvant Therapy for Breast Cancer**
- Mentor: Professor Michael Stone, Chemistry*
- Group: B  
5:30–6:30 p.m.
- 93 Dena Liu '23  
Human and Organizational Development; Medicine, Health and Society
- High-Throughput B Cell Epitope Determination by Next-Generation Sequencing**
- Mentor: Professor Ivelin Georgiev, Computer Science*
- Group: B  
5:30–6:30 p.m.
- 94 Vikrant Mahajan '23  
Medicine, Health and Society; Neuroscience
- Chemesthetic Modulation in Alcohol Taste Preference in Variable-Time Access Lickometers**
- Mentor: Professor Hassane Mchaourab, Molecular Physiology and Biophysics*
- Group: B  
5:30–6:30 p.m.
- 95 Insha Maknojia '23  
Human and Organizational Development; Medicine, Health and Society
- Effect of Pre-Conditioning with Copolymer-Based Cell Membrane Stabilizer Poloxamer 188 on Adult Mouse Coronary Artery Endothelial Layer Integrity after Prolonged Hypoxia/Reoxygenation**
- Mentor: Professor Teresa White, Clinical Pediatrics*
- Group: B  
5:30–6:30 p.m.
- 96 Judy Min '22  
Medicine, Health and Society; Psychology
- Treatment Options for Triple Negative Breast Cancer: Mechanisms and Novel Approaches**
- Mentor: Professor Jonathan Ehrman, Physics and Astronomy*
- Group: B  
5:30–6:30 p.m.

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# In-Person Presentations – Group B

- 97 Vivian Nguyen '24  
Cognitive Studies;  
Child Development
- The Use of Incidental Memory Traces Measured by an Auditory ERP as an Early Biomarker of Autism Spectrum Disorder**
- Mentor: Professor Sachin Patel, Psychiatry*
- Group: B  
5:30–6:30 p.m.
- 98 Hannah Noh '23  
Medicine, Health and Society
- Genetics Research on Women's Health Disparities, Uterine Fibroids**
- Mentor: Professor Sasha Key, Hearing and Speech Sciences*
- Group: B  
5:30–6:30 p.m.
- 99 Peter Novak '22  
Neuroscience
- Using EEG to Investigate the Role of Alpha-Band Oscillations in Attention and Working Memory**
- Mentor: Professor Digna Velez Edwards, Obstetrics and Gynecology*
- Group: B  
5:30–6:30 p.m.
- 100 Tara O'Shea '22  
Biochemistry; Chemical Biology
- Investigating the Role of BRWD3 in ORC Ubiquitination**
- Mentor: Professor Geoffrey Woodman, Psychology*
- Group: B  
5:30–6:30 p.m.
- 101 Mira Patel '22  
Neuroscience; Medicine Health and Society
- COVID-19 Vaccine Hesitancy in Adult Emergency Department Patients**
- Mentor: Professor Ethan Lippmann, Chemical and Biomolecular Engineering*
- Group: B  
5:30–6:30 p.m.
- 102 Parker Penny '22  
Neuroscience
- Clathrin Adaptor Protein 1 Plays a Role in the Basolateral Sorting of NKCC1**
- Mentor: Professor Lauren Jackson, Biological Sciences*
- Group: B  
5:30–6:30 p.m.
- 103 Ahalya Ramesh '22  
Environmental Sociology;  
Medicine, Health and Society
- The Gift of Life - Assessing Methods for Reducing the Global Burden of Congenital Heart Disease**
- Mentor: Professor Marjan Rafat, Chemical and Biomolecular Engineering*
- Group: B  
5:30–6:30 p.m.
- 104 Madelynn Roche '22  
Secondary Education; Mathematics
- Limiting Distributions on Quantum Modular Forms**
- Mentor: Professor John McLean, Mathematics*
- Group: B  
5:30–6:30 p.m.
- 105 Elizabeth Rosenthal '22  
Anthropology; Medicine, Health and Society
- Barriers to Reproductive Healthcare for Transgender and Non-Binary Individuals: A Social Media and Content Analysis Study**
- Mentor: Professor Erin Calipari, Pharmacology*
- Group: B  
5:30–6:30 p.m.
- 106 Alex Shiino '22  
Neuroscience
- Evaluation of Early Cognitive and Behavioral Symptoms in the Offspring of Parents with Huntington's Disease**
- Mentor: Professor Carissa Cascio, Psychology*
- Group: B  
5:30–6:30 p.m.

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| <p><b>107</b> Jack Slatton '22<br/>Medicine, Health and Society;<br/>Neuroscience</p> | <p><b>Factors Influencing the Maintenance of Spasticity Treatment</b><br/><i>Mentor: Professor Lauren Buchanan, Chemistry</i></p>                                                                                                                                                                                    | <p><b>Group: B</b><br/>5:30–6:30 p.m.</p> |
| <p><b>108</b> Elena Solopova '23<br/>Molecular and Cellular Biology</p>               | <p> <b>LOX-Expressing Activated Astrocytes Are Enriched in White Matter Hyperintensities in Alzheimer's Disease and Cerebral Amyloid Angiopathy: A Post-Mortem MRI Study</b><br/><i>Mentor: Professor Lars Plate, Chemistry</i></p> | <p><b>Group: B</b><br/>5:30–6:30 p.m.</p> |
| <p><b>109</b> Lily Wald '22<br/>Neuroscience</p>                                      | <p><b>MT Regression of CEST Data</b><br/><i>Mentor: Professor Zhongyue Yang, Chemistry</i></p>                                                                                                                                                                                                                       | <p><b>Group: B</b><br/>5:30–6:30 p.m.</p> |
| <p><b>110</b> Eric Whitmer '23<br/>Percussion Performance</p>                         | <p><b>The Orchestra as a Tool for Social Good</b><br/><i>Mentor: Professor Seth Smith, Radiology and Radiological Sciences</i></p>                                                                                                                                                                                   | <p><b>Group: B</b><br/>5:30–6:30 p.m.</p> |
| <p><b>111</b> Fan Xue '22<br/>Biomedical Engineering;<br/>Electrical Engineering</p>  | <p><b>Toxic Metal Ion Detection by Crown Ethers Using Surface-Enhanced Raman Spectroscopy</b><br/><i>Mentor: Professor Robert Fry, Musicology and Ethnomusicology</i></p>                                                                                                                                            | <p><b>Group: B</b><br/>5:30–6:30 p.m.</p> |

The Vanderbilt Undergraduate Research Fair is sponsored by the Office of Immersion Resources, the Vanderbilt Undergraduate Summer Research Program, the Office of the Provost and the Littlejohn and Goldberg Families.

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